Two New Species of *Fuchsia* Section *Fuchsia* (Onagraceae) from Southern Ecuador

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ABSTRACT. Two new species of *Fuchsia* sect. *Fuchsia* (Onagraceae) from the Andes of southern Ecuador are described and illustrated. *Fuchsia campii* P. E. Berry is known from mid-elevation cloud forest of Azuay and Loja Provinces, and *Fuchsia summa* P. E. Berry is a high-elevation species currently known only from Loja Province. Both occur in Podocarpus National Park, together with several other rare species of *Fuchsia*.

Studies and collections of plants from southern Ecuador have increased dramatically in the past decade, especially in areas such as Podocarpus National Park in Loja Province. Many novel plants have been located, and this paper describes two new species of *Fuchsia* that occur in cloud forest areas on the slopes of Cerro Toledo, one of them also known further north in Azuay Province. Three other species previously thought to be extremely rare in southern Ecuador are also known from Cerro Toledo: *F. andrei* I. M. Johnston, *F. scherffiana* André, and *F. steyermarkii* P. E. Berry. All these taxa belong to the largest section of the genus, section *Fuchsia*, which now approaches 65 species. They are also examples of the high degree of local endemism in cloud forests of southern Ecuador, where moist montane habitats are often separated by dry valleys and show a wide range of precipitation regimes.

Fuchsia campii P. E. Berry, sp. nov. TYPE: Ecuador. Azuay: Quebradas leading into the Río Collay, 3–8 km N of Sevilla de Oro, 7000–8300 ft., 27 Aug. 1945, *W. H. Camp E-4994* (holotype, RSA herbarium # 71952; isotypes, G-DEL, MO, NY, UC, US). Figure 1.

Frutex 1.5–4 m altus, foliis 3-vel 4-verticillatis, interdum oppositis, 3–9 × 1–3 cm, margine subintegro vel 7–10-dentato, floribus axillaribus apicem versus, pedicellis 18–30 mm longis, tubo florali roseo 29–45 mm longo, sepalis lanceolatis 12–15 mm longis, petalis auriantiacis 8–11 mm longis, 4–6 mm latis.

Erect to recumbent shrub 1.5–4 m tall, well branched with mostly ascending branches; young growth pubescent, the trichomes 0.1–0.5 mm long, appressed to erect; branchlets terete to slightly angled, older branches with purplish, exfoliating bark. Leaves mostly in whorls of 3 or 4, sometimes opposite or subopposite; blade membranous, narrowly elliptic, 3–9 cm long, 1–3 cm wide, acute to acuminate at the apex, acute at the base, subglabrous to sparsely strigose when young on both surfaces and margin, trichomes persisting mainly along the midvein and secondary nerves on lower surface when fully expanded, upper surface smooth, shiny, and light to dark green, lower surface paler green; margin nearly entire, usually with 7–10 glandular teeth projecting slightly from the edge especially in the upper ½ to ⅔ of the blade; secondary nerves (5–)8–10 on either side of the midvein; petiole strigose, (4–)6–25 mm long; stipules narrowly lanceolate when young, 1–1.5 mm long, ca. 0.2 mm wide, the tip quickly abscising and the thicker lower third persisting or abscising later. Flowers axillary in the upper leaf axils, 2–several per node, pedicel 18–30 mm long; floral tube narrowly funnelform, (29–)32–45 mm long, 2.5–3.5 mm wide at the base, narrowed to 2–2.5 mm wide in the lower ¼, then gradually widened until 5–8 mm wide at the rim, sparsely strigose outside, densely pubescent inside in the lower narrowed portion; nectary a doughnut-shaped ring 1–2 mm high and 2–3 mm wide at the base of the tube surrounding the style; ovary 4-angled, 5–6 mm long, 2–3 mm thick; sepals narrowly triangular or lanceolate, 12–15 mm long, 4–5 mm wide at the base; petals elliptic to obovate, 8–11 mm long, 4–6 mm wide, broadly acute at the apex, sometimes with a small mucro; tube and sepals bright pink except for the green sepal tips, petals orange and darker than the tube; style pink, 40–64 mm long, densely pubescent in lower third, stigma pink, capitate, ca. 2 mm high, ca. 2.5 mm wide; filaments 10–12 mm and 7–9 mm long, anthers oblong, 2–3 mm long, 1–1.5 mm wide. Fruit oblong-ellipsoid before maturity, subrotund when ripe, 9–15 mm long, 5–9 mm thick; seeds flattened, obtriangular in outline, 1.8–2.2 mm long, 1.2–1.6 mm wide, ±200 per fruit. Gametic chromosome number $n = 11$.

Ecology and distribution. Occurring in thickets, along streams, and along roadsides in pasture zones on moist mountain slopes, 2300–2700 (–3350) m, in Azuay and Loja Provinces, Ecuador.

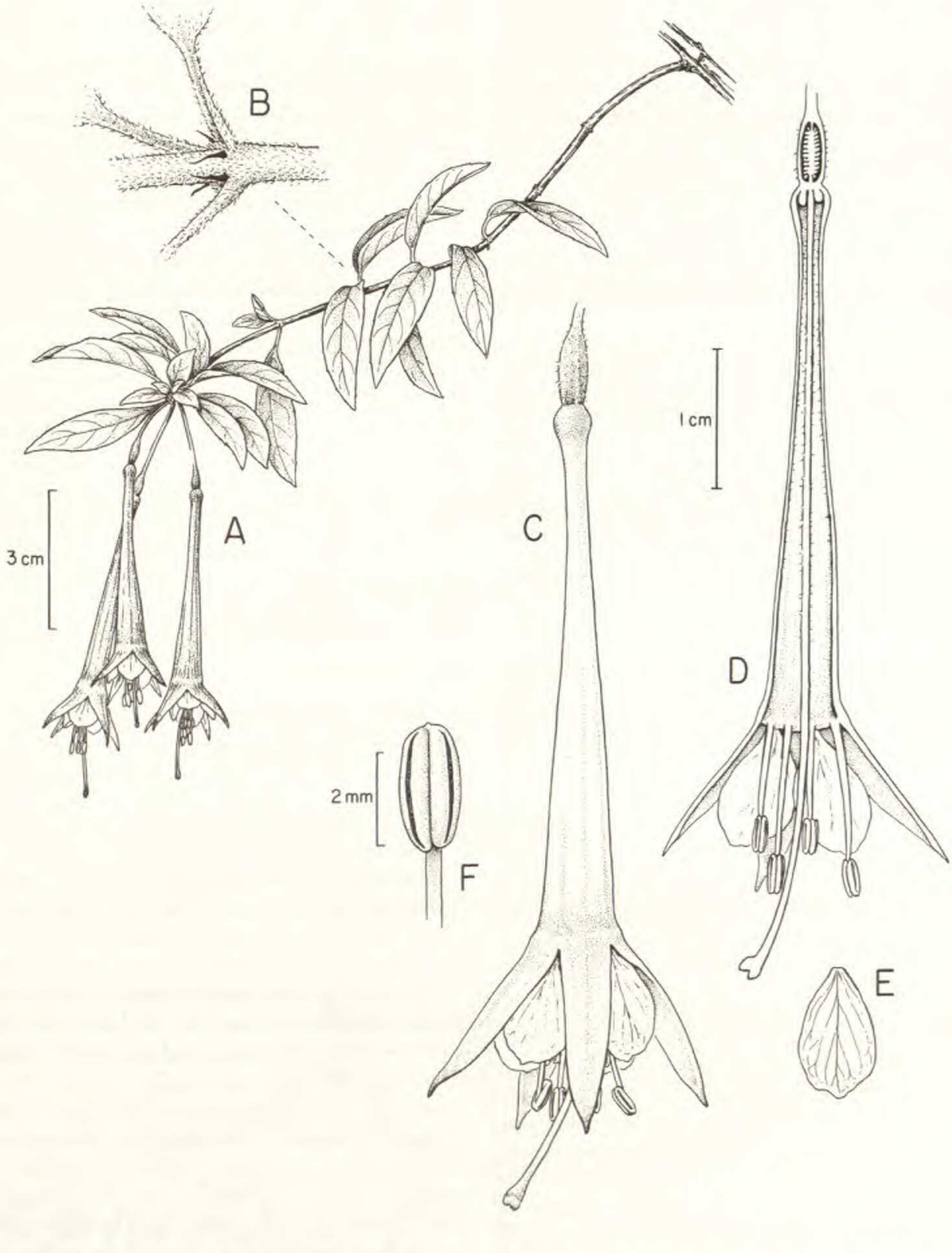

Figure 1. *Fuchsia campii* P. E. Berry. —A. Habit. —B. Detail of stipules. —C. Flower at anthesis. —D. Flower in longitudinal cross section. —E. Petal. —F. Anther. Drawn from *Berry & Brako 4646*.

Etymology. Named for Wendell H. Camp (1904–1963), a botanist who made extensive plant collections in southern Ecuador for the New York Botanical Garden in the mid 1940s.

The type specimen of *Fuchsia campii* was treated by Munz (1974) under *Fuchsia ayavacensis* HBK, but that species has wider and shorter petals, larger and more pubescent leaves, and occurs in drier habitats in southern Ecuador and in northern Peru. One of the paratypes cited here (*Camp E-4257*) was listed by Munz under *F. canescens* Bentham, but that species is confined to southern Colombia and

has thick, firm flowers, short pedicels, trowel-shaped petals, tetragonous sepals in bud, and mostly 4-whorled leaves. *Fuchsia campii* might be confused with *F. vulcanica* André (sensu lato) but differs in its narrower, orange petals contrasting with the pink floral tube and sepals (the sepals also turn green toward the apex) and in the narrower leaves with margins entire or else with small teeth. It is apparently diploid, as chromosome counts of $n = 11$ and $2n = 22$ were obtained from *Escobar 1543*, and three collections identified as *F. vulcanica* from Azuay Province were tetraploid (Berry, 1982).

Paratypes. ECUADOR. **Azuay:** E Cordillera, 1–8 km N of the village of Sevilla de Oro, 8000–9000 ft., 27 July 1945, *Camp E-4257* (NY, RSA); quebradas leading into the Río Collay, 3–8 km N of Sevilla de Oro, 7000–8000 ft., 27 Aug. 1945, *Camp E-4994* (MO); Partidero Llantera-Chiquintad-Saucay-Guandum, 10,000 ft., 27 May 1979, *Jaramillo 1068* (AAU, QCA). **Loja:** road from Yangana to Cerro Toledo, 2360 m, 13 Nov. 1988, *Berry & Brako 4646* (MO, QCA); between Yangana and Toledo, 7700–8000 ft., 26 July 1979, *Escobar 1543* (MO, TEX), *1544* (MO, TEX), *1545* (MO, TEX).

Fuchsia summa P. E. Berry, sp. nov. TYPE: Ecuador. Loja: shrub patches in open páramo above tree line, road from Yangana to Cerro Toledo, 3150 m, 13 Nov. 1988, *P. E. Berry & L. Brako 4644* (holotype, MO; isotypes, QCA, US). Figure 2.

Frutex 30–100 cm altus, ramulis erectis foliis apicem versus congestis 3-vel 4-verticillatis, 15–35 mm longis, petiolis 5–8 mm longis. Flores axillares, 4-angulati, pedicellis 4–7(–10) mm longis, tubo florali 18–26(–32) mm longo, sepalis 10–14 mm longis, petalis suborbicularibus 8–12 × 7–9 mm.

Erect shrub 30–100 cm tall; branches erect, mostly bare except for the leafy tips, with short internodes mostly 6–12(–25) mm long and protruding leaf base scars, branchlets appressed-pubescent with whitish trichomes. Leaves mostly in whorls of 3 or less often 4, densely clustered at the stem apices; blade subcoriaceous, broadly elliptic, 15–35 mm long, 12–18 mm wide, broadly to narrowly acute or rounded at the apex and base, usually with scattered appressed trichomes along the midvein on both surfaces, upper surface dark green, lower surface paler green; margin gland-denticulate with trichomes between the teeth; secondary nerves 4–6 on either side of the midvein; petiole 5–8 mm long; stipules narrowly lanceolate, 1–2 mm long, 0.3–0.5 mm wide. Flowers axillary and pendent in the upper leaf axils, 2–several per node, pedicel 4–7 mm long in flower, to 10 mm long in fruit; floral tube narrowly funnelform, 18–26(–32) mm long, 2–2.5 mm wide at the base, 4–6 mm wide at the rim, 4-angled in cross section, appressed-pubescent to nearly glabrous in the lower half outside, densely villous in lower half inside; nectary a doughnut-shaped ring ca. 1.5 mm high and 2 mm wide at the base of the tube surrounding the style; ovary 4-angled, 5–6 mm long, 2–3 mm thick; sepals broadly elliptic, acute to subacuminate at the apex, 10–14 mm long, 5–6 mm wide at the base, quadrangular in cross section when joined before opening; petals suborbicular, slightly spreading, 8–12 mm long, 7–9 mm wide, broadly acute to mucronate at the apex, broadly acute to spathulate at the base; tube pale red, sepals pale green in bud but becoming flushed with red by anthesis, petals slightly darker red than the tube; style red, 28–35 mm long, villous in lower half, stigma pink, capitate, ca. 2 mm high by 2 mm wide; filaments 5–7 mm and 4–5 mm long, anthers broadly oblong, ca. 2 mm long and 1.5 mm wide. Fruit 4-angled before fully mature, 9–12 mm long, ca. 5 mm thick; seeds flattened, obtriangular in outline, 1.9–2.1 mm long, ca. 1.5 mm wide.

Ecology and distribution. Occurring in low shrub patches among open grassy areas at and above tree line, on very humid upper slopes of Cerro Toledo east of Yangana in Loja Province, Ecuador, 3100–3450 m elevation.

Etymology. From the Latin *summus,* meaning highest or uppermost, in reference to this species occurring at tree line and at higher elevations than any other species of *Fuchsia* on the same mountain.

This species forms small, dense thickets in exposed areas close to tree line. Its leaves are small, with few secondary veins, and are tightly congested toward the stem apices. The flowers are distinctive in their short pedicels that angle sharply downward alongside the stems and in the strongly quadrangular ovary, floral tube, and sepals in bud. *Fuchsia summa* appears to be morphologically most similar to *F. loxensis* HBK, a broadly circumscribed species in Berry (1982). Besides the characters listed above, *F. summa* differs in the greenish coloration of the sepals and generally more pubescent flowers.

Paratypes. ECUADOR. **Loja:** road from Yangana to Cerro Toledo, 3140 m, 12 Nov. 1988, *Berry & Brako 4643* (MO, QCA); Cerro Toledo, Parque Nacional Podocarpus, 3000–3400 m, 27 Nov. 1988, *Madsen 75617* (AAU, MO), 1 Dec. 1988, *Madsen et al. 75640* (AAU), 21 July 1989, *Madsen et al. 86119* (AAU, MO), 30 Oct. 1989, *Madsen 86320* (AAU), 30 Oct. 1989, *Madsen 86343* (AAU); Cerro

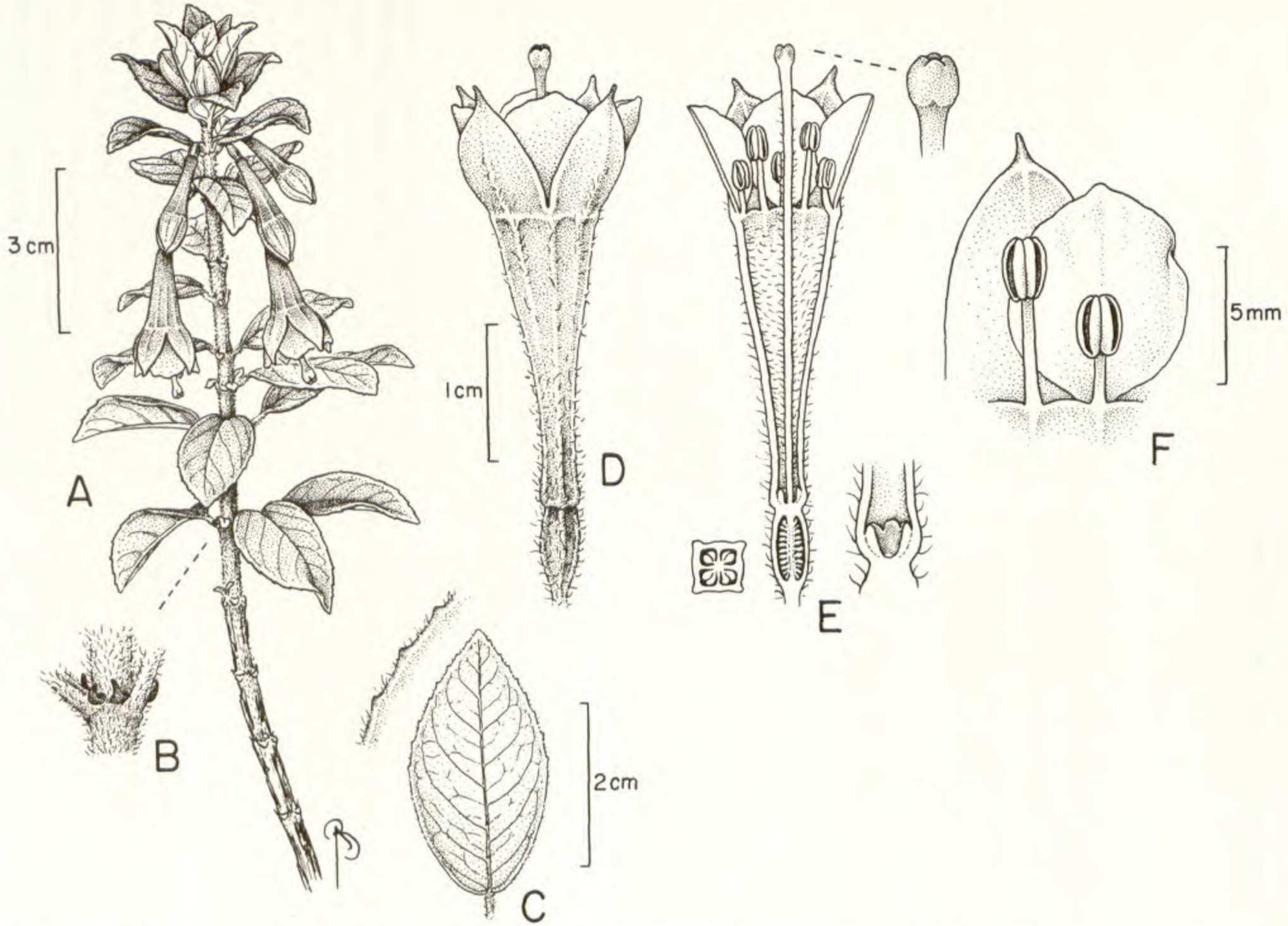

Figure 2. *Fuchsia summa* P. E. Berry. —A. Habit. —B. Detail of stipules. —C. Leaf and detail of margin. —D. Flower at anthesis. —E. Flower in longitudinal cross section with details of the stigma and nectary; at lower left a cross section of the ovary. —F. Detail of a sepal, petal, and two stamens. Drawn from *Berry & Brako 4644*.

Toledo E of Yangana, Parque Nacional Podocarpus, 3400–3450 m, 26 Feb. 1985, *Øllgaard et al. 58186* (AAU).

Acknowledgments. This work was supported by grant 3827–88 of the National Geographic Society. The illustrations were prepared by Bobbi Angell, and Roy Gereau kindly reviewed the Latin diagnoses.

Literature Cited

Berry, P. E. 1982. The systematics and evolution of *Fuchsia* sect. *Fuchsia* (Onagraceae). Ann. Missouri Bot. Gard. 69: 1–198.

Munz, P. A. 1974. Flora of Ecuador. 141. Onagraceae. Opera Bot. Ser. B no. 3, 3–46.